

REMARKS

The pending claims are directed toward methods for deinking wastepaper, and compositions used for deinking. The compositions include an alkoxyated fatty alcohol and between 20 and 60 wt.% of a fatty acid. The alkoxyated fatty alcohol has an HLB of greater than 13, and is typically present in a solid state; the deinking methods must include one or more flotation steps; and the methods are limited to non-alkaline and low-alkaline pulp slurries having a pH of from 6.0 to 8.8. Support for the HLB limitations is found in original claim 73. Support for the flotation limitation is found in the original independent claims. Support for the pH limitation is found in original claim 17. A new search is not needed because each of these limitations is found in the original claims.

The Office Action rejects the pending claims over Miyauchi, US 5,801,135, in view of several secondary references. However, the present invention differs from Miyauchi in several significant respects. For example, the fatty alcohols used in the present invention have an HLB greater than 13, whereas Miyauchi expresses a preference for fatty alcohol liquid surfactants that have an HLB "preferably in a range of 2 to 12, particularly 3 to 10." (Col. 3 at lines 47-45.) This is significant because the present invention and Miyauchi are both limited to flotation processes. (See Miyauchi at col. 4, line 35.) Before the present invention, a skilled worker would not have been motivated to use a surfactant in a flotation process with an HLB greater than 13 because higher HLB surfactants are known to hydrophilize ink particles which in turn makes them difficult to separate via flotation. Miyauchi acknowledges this mind-set that prevailed in the prior art by recommending a low HLB surfactant for use in his flotation deinking process.

In addition, the methods of the present invention are performed in pulp slurries that have a pH of less than 8.8. In contrast, Miyauchi practices conventional alkaline deinking. In particular, Miyauchi's examples are practiced in slurries to which 1% caustic have been added. (Col. 8 at line 4.) It is well known in the art that the addition of this large amount of caustic creates alkaline conditions that exceed pH levels of 9 or even 10. That is precisely why Miyauchi must add peroxide to the slurry, because the alkaline conditions yellow the pulp fibers.

The Miyauchi reference does not support a prima facie case of obviousness because Miyauchi does not disclose a surfactant with an HLB greater than 12, and it would not have motivated a skilled worker to employ such a surfactant in a flotation process. The Miyauch

reference also does not support a prima facie case of obviousness because it does not disclose low-alkaline deinking, and it would not have motivated a skilled worker to deink in low-alkaline conditions using a high HLB alkoxylated fatty alcohol and between 20 and 60 wt.% of a fatty acid.

The secondary reference cited in the Office Action, WO 93/22491 of Cook et al., does not cure this deficiency, because it does not disclose or suggest the use of high HLB surfactants in flotation deinking, and it does not disclose or suggest the use of a high HLB alkoxylated fatty alcohol and between 20 and 60 wt.% of a fatty acid in a low or non-alkaline system.

In addition, there is abundant evidence of unexpected results in the specification to support the patentability of the present invention. For example, Table 3 gives the following results:

Composition		Bright	Eric
1	7.5#/ton Lionsurf 880 @ pH 9.0 (a blend of fatty acid and alkoxylated fatty acid having an HLB of less than 9)	50.2	516
2	7.5#/ton Lionsurf 880 @ pH 7.1	48.6	573
3	Example 1 @ pH 7.1 (a blend of the fatty acid in Lionsurf 880 and an alkoxylated fatty alcohol having an HLB of greater than 13.	49.3	534

As can be seen, one observes worse Brightness and Eric values when the pH is dropped from 9.0 to 7.1, when using a conventional flotation deinking agent -- Lionsurf 880 -- which contains a surfactant with an HLB of less than 9 (compare compositions 1 and 2). When, however, the HLB of the surfactant in the deinking agent increases above 13, one sees an improvement in Brightness and Eric values even when deinking at pH of 7.1 (compare compositions 2 and 3). This surprising result could not have been expected from the prior art, which teaches that lower HLB surfactants are needed in flotation deinking systems.

In addition, Table 9 presents the following results:

	Bright	Eric
6#/ton Comparative Example 3 (20% fatty acid; 70%alkoxylated fatty alcohol; 10% water)	52.1	439
6#/ton Example 1 (38% fatty acid; 47% alkoxylated fatty alcohol; 15% water)	53.0	389

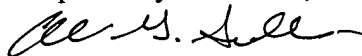
As this table shows, improved results in Brightness and Eric are seen when the proportion of fatty acid in the deinking composition is increased to the proportion recited in the present claims (i.e. between 20 and 60%). Once again, this surprising result could not have been predicted from Miyauchi and Cook, and supports the patentability of the present invention.

For the above and foregoing reasons, Applicant respectfully requests that the pending rejections be withdrawn and that the application be allowed for issuance.

CONCLUSION

The Examiner is invited to contact the undersigned at 404-572-3513 should he have any questions concerning this application or response. To the extent any fee is due in connection with this submission, the Commissioner is hereby authorized to charge such fee to deposit account number 14-0629.

Respectfully submitted,



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